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REMARKS/ARGUMENTS

The Examiner has reiterated his previous rejection of claims 1-82 under 35 U.S.C. § 103(a) as being unpatentable over Bencheck et al. (U.S. Patent 6,072,777) in view of Opoczynski (U.S. Patent 5,655,068). In response thereto, Applicant has amended independent claims 1, 30, 56 and 71 to specify that the performance monitor information is inserted and extracted from an augmented payload envelope having a payload capacity that is expanded relative to a standard SONET/SDH frame by an amount sufficient to accommodate the PM (performance monitor) information. In one embodiment, the augmented SPE has at least one additional column of payload for accommodating the PM information.

Paragraph 8 of the Detailed Action states that Bencheck teaches an augmented synchronous payload envelope (SPE). With respect, Applicant disagrees that Bencheck teaches or even suggests an augmented synchronous payload envelope. None of the passages cited by the Examiner (Bencheck, col. 2, lines 12-21; col. 4, lines 30-45; col. 6, lines 3-23; and col. 6, line 42 to col. 7, line 30) teach or suggest an augmented payload envelope. These passages merely teach the insertion and extraction of section and line overhead information into the transport overhead and the insertion and extraction of path overhead information into the payload envelope. By loading path overhead information into a portion of the SPE, the SPE is effectively "converted" into a payload envelope having a reduced data payload because some of the SPE's 783 bytes, as mandated by the SONET standard, are occupied by the path overhead information. In contrast, the present invention provides an augmented SPE having a payload capacity that is expanded relative to a standard SONET/SDH frame by an amount sufficient to accommodate the performance monitor information. In other words, unlike Bencheck, there is no effective reduction in the data that is conveyed by each SONET frame.

Furthermore, it is respectfully submitted that the insertion and/or extraction of performance monitor information into or from an augmented synchronous payload envelope is non-obvious because persons of ordinary skill in the art know that the

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SONET infrastructure is designed to process this 9 by 90 frame exclusively, and there is nothing in the literature that would teach or suggest that any other frame size can be successfully conveyed through such equipment.

Applicant has invented a system and method of validating a connection between arbitrary end points using an augmented SPE. In one embodiment, as illustrated in Figure 3, the augmented SPE has one additional column into which performance monitor information can be inserted and then extracted. Even though the SONET frame is augmented by the addition of at least one column of payload, it can still be pointer-processed by standard SONET infrastructure. A person of ordinary skill in the art of synchronous optical networks would have no reason to believe it possible to defy the SONET standard frame format in order to accommodate extra performance monitor information for validating an OP-N connection. The vast body of literature on SONET actually teaches away from the present invention. A wealth of both patent- and non-patent literature has been published describing myriad methods for mapping tributaries into SONET frames. These various mapping techniques have been devised because it has always been assumed that SONET frames must have precisely 9 rows and 90 columns. Similarly, there is a wealth of literature describing techniques for concatenating SONET frames, which also illustrates the point that persons of ordinary skill in the art have invariably considered the SONET standard frame format to be strictly fixed and immutable.

The present invention is highly inventive in that it exploits a generally unknown idiosyncrasy in SONET. Applicant realized that the payload pointer, which is contained within the H2 byte of each SONET frame, is represented by a 10-bit binary number which is thus capable of reaching a maximum pointer value of 1024. In other words, the max pointer value in the H2 byte can be extended from the 783 bytes mandated by the SONET standard to an augmented value as high as 1024. Applicant also realized that, at the hardware level, counters and/or registers used for SONET also operate with 10-bit capacity. These two realizations led Applicant to the conclusion that the SONET frame could be augmented to accommodate an SPE of up to 1024 bytes. In other words,

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Applicant recognized that the SPE of a SONET frame could be augmented by adding one or more columns of payload to accommodate extra performance monitor information.

Because augmenting the SPE defies widely held assumptions about the invariability of the SONET frame standard, it is respectfully submitted that the claimed invention is not obvious to a person of ordinary skill in the art of SONET. Accordingly, it is respectfully submitted that the claims, as amended, are allowable.

Applicant therefore respectfully requests the prompt issuance of a Notice of Allowance.

If any extension of time under 37 C.F.R. § 1.136 is required to obtain entry of this response, such extension is hereby respectfully requested. If there are any fees due under 37 C.F.R. §§ 1.16 or 1.17 which are not enclosed herewith, including any fees required for an extension of time under 37 C.F.R. § 1.136, please charge such fees to our Deposit Account No. 19-5113.

Respectfully submitted,

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